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13. Old Enterprise, right shore of Lake Munroe.

14. Outlet of Lake Munroe, right bank.

15. Wekiva, right bank.

16. Blue Spring, right bank.

17 & 18. Two mounds in the woods below Blue Spring, with a wide swamp between them and the river. A third but small mound was found about a half mile from them.

19. Mound above Hawkinsville, left bank formerly, and still ought to be called Osceola, or, as Dr. Brinton writes the name, Ass-se-he-ho-la, Rising Sun, after the celebrated chief who was prominent in the Florida War.

20. Mound below preceding, left bank, having the usual appearance of the other shell-heaps, but in which we failed to find signs of its artificial origin.

21. Old Town, left bank, seven miles below Hawkinsville.

22. Small mound in the woods in the rear of the preceding.

23. Mound above the outlet of Lake Dexter, left bank.

24. Mound below the outlet of Lake Dexter, right bank.

25. Fort Butler, left bank.

26. Volusia, right bank.

27. Rope's Island, right bank, entrance of Lake George.

28. Drayton's Island, now Rembrandt's Island, at the outlet of Lake George, left bank.

29. Horse Landing, right bank, eight miles above Palatka.

30. Palatka, left bank, one hundred miles from the mouth of the river.

31. St. John's Bluff, right bank, five miles from the mouth of the river.

32. Old and New Fernandina, at the northern end of Amelia Island.

THE POTATO-MOULD.

BY JOHN L. RUSSELL.

MOULD and mouldiness are two words with which every one is familiar, but few are aware how numerous and diversified are the forms under which the little plants these words designate occur, and to what extent is the mischief they occasion, or know much of the utility in the plan of nature they sustain.

The science of botany as such does not date back very far, and in its place and prior to its existence, all vegetable growth was regarded with a superstitious, and in most cases

with an useless reverence, containing as was supposed some rare power in healing, or some efficacy in incantations and magic.

With regard to the moulds, it was Micheli, who in 1729 published his *Nova Plantarum Genera*, that established the scientific character of the genus *Botrytis*, on which since, from certain structural differences in the mode of producing the seed, other genera or distinct kinds of mould have been constructed. Of these, Corda instituted the genus *Peronospora*; the minute moulds which belong to it, and they are numerous, infesting only living plants. The discovery that their presence caused injurious effects and even great loss is of modern date, and to the investigations of Professor Caspary of Bonn, the botanist and the agriculturist alike are indebted for the valuable knowledge.

The words "mould and mouldiness," familiar as they are, are now significant of topics interesting to the farmer, and by them he is annually subjected to the loss of his cabbages, clover, lettuce, onions, parsnips, peas, potatoes, etc.

To the common eye, and unaided by science, mildews, mouldiness, and similar microscopic plants, would be readily confounded. But the mildew is a much more highly developed fungus, and though apparently as dangerous, is not so to the same extent. The egg-like mould (*Oidium*) which covers and suffocates the young gooseberry or the grape, readily yields to agents which will destroy it, and set free from its threads the swelling fruit; but the potato-mould for instance, is the inception of the potato-rot, which is so dreaded.

The "moulds," then, are fearful parasitic plants, which riot on the tender tissues of other plants, and eventually cause their death. It is estimated that in Europe no less than ten different kinds of fungi are known as infesting the potato, and probably the number in this country is no less. It is on this account that those who have attempted to describe the potato disease among us, have differed so widely from

each other; and while each has thought the other wrong, all have attained some approximation to the truth.

The potato-mould is the *Peronospora infestans* Caspary, and were it not for its effects, would be regarded by every one of taste as a beautiful object. Were we flies or insects, which are so liberally endowed with sight and eyes, and quite unconcerned about the crops, the leaves of the potatoes would be quite a pretty set of objects to investigate, presenting handsome, white, many-branched and beaded-twiggled plants, with oval or egg-shaped seed-bodies on the tips of each smaller branch. These vegetable growths issue from the breathing pores of the leaves, and besides feeding themselves on the nutriment intended for the leaves, choke up the internal and external passages and prevent the healthy action from being maintained. Soon the leaves become at first paler, or yellow, then discolored spots appear, then the stems are spotted with dark patches. Even the cellular tissue (or pulpy part of the stems or stalks, "potato-stalks" as we call them) is discolored and filled with dark clotted substances: subsequently, sooner or later, the stalks putrify, the skin separates from the harder or woody portions; next the tubers suffer, spots and decay appear in a more or less regular manner of concentric lines, the skin withers, a white mouldiness often occurs, especially if the potatoes lie in a moist place; the "rot" increases with fearful rapidity, the tuber has a disgusting odor, certain smaller insects help the process at this stage, and putrescence closes the scene.

A plant thus simple in its general structure, and capable of bearing on its rapidly growing branches three thousand two hundred and seventy (3,270) seed-like pods, each containing at least six seed-like bodies (*zoöspores*) on one square line of the under surface of the leaves, and from each of which in turn a perfect seed-bearing "mould" is produced in eighteen hours, may be readily conceived to be capable, minute as it is, of incalculable mischief. The reader may, however, calculate by reduction to fractions of an inch, the

size of one of the seed-vessels (*acrospore*) containing these six or more seeds, when Professor Caspary computes its breadth at $\frac{1}{165}$ of a millimetre, and its length at $\frac{1}{125}$ of a millimetre (*Monatsberichte der Königl. Akademie*, etc., *für Mai*, 1855). Seeds, so minute, can be readily absorbed by the roots or even by the leaves, and in such abundance that the very atmosphere may be surcharged with them. A few of them placed in a drop of water and applied to the leaves, stems and tubers, by Dr. DeBary, produced in a short time brown spots, and eventually the disease.

The remedy or the prevention, what? Perhaps none as yet discovered which will be effectual, but the entire destruction by fire of all infected stalks and potatoes looks to a suggestive prevention.

DEER AND DEER-HUNTING IN TEXAS.

BY CHARLES WRIGHT.

IN the States east of the Mississippi river, the number of persons who have seen deer in the wild state is comparatively small, and they are exceedingly few who, by personal experience, have learned much of their ways. And, as these animals are fast disappearing, so also are they who have had the opportunity of studying their habits in their native haunts. Hence, it seems not inappropriate to put on record such information as I have gained, partly from personal experience, and partly from others who have had far more and better opportunities of knowing them well.

The deer is by nature a timid animal, and persecution makes it more so. Even the gentlest pet that will take food from the hand or lick the fingers will not suffer that hand upon the back without shrinking. Of the very different degrees of domesticity to which animals attain, that of the deer is among the lowest. According to the frequency and